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*Old and New Bills of Mortality; Movement of the Population; Deaths and Fatal Diseases in London during the last Fourteen Years.* By JOHN ANGUS, ESQ., General Register Office.

[Read before the Statistical Society of London, Monday, 10th April, 1854.]

To the plague the public of London owed their bills of christenings and burials; to the acknowledged value of such records in connexion with the property of individuals, and only in a second degree to the knowledge of their importance in political arithmetic, we are indebted for the present system of registration of births, deaths, and marriages. This is another illustration of a natural law, by which contrivances, to which men are led by fear, love of property, or other powerful impulses of the mind, become fertile in new suggestions, and subserve innumerable uses, which enrich the storehouse of knowledge and dispense incalculable benefit to mankind. If it could be imagined that England should cease among nations, that her institutions should perish and her cities crumble to the dust, and that the records of the births, deaths, and marriages of her people had survived the wreck, with collateral proof of the social purposes to which they had been applied,—these records would furnish evidence, and evidence of a most satisfactory kind, that she had made some progress in civilization. Within the range of philosophical inquiry there is nothing more attractive in its character, or more important in relation to practical medicine, sanitary police, and the economy of wealth, than the laws of vitality, and the influence of age, sex, occupation, condition in life, situation, climate, change of seasons, and institutions, in promoting health or planting the seeds of disease.

The old bills of mortality\* for London were commenced in 1592, but in December, 1595, on the cessation of the plague, were discontinued. They were resumed on the 29th of December, 1603, the first year of the reign of King James the First, on the recurrence of the plague, and have been continued since that time to the present without intermission, except during the great fire, when the deaths of two or three weeks were given in one bill. On the 18th of July, 1625, the parish-clerks set up a printing-press in their hall, for which they had obtained a decree under the seal of the High Commission Court; and from that date the number of burials was printed against each parish.

The returns profess to include 97 parishes within the walls, 17 without the walls, 24 out-parishes in Middlesex and Surrey; also Westminster (which was added in 1626,) containing 10 parishes. When a person died, the tolling of a bell, or an order given to the sexton for a grave, announced the event to the searchers,—“old-women-searchers,” as Graunt calls them,—the accuracy of whose

\* The invention of “bills of mortality” is not so modern as has been generally supposed, for their proper designation may be found in the language of ancient Rome. Libitina was the goddess of funerals; her officers were the Libitinarii, *our* undertakers; her temple in which all business connected with the last rites was transacted, and in which the account of deaths—*ratio Libitina*—was kept, served the purpose of a Register Office.

reports on the cause of death was sometimes damaged by "the mist of a cup of ale or the bribe of a two-groat fee," instead of one groat, which was their usual *honorarium*. Each parish-clerk made his report on Tuesday night; the general account was made up and printed on Wednesday, and was published on Thursday. The price of the bills was 4s. a-year. In the modern bills prepared by the Registrar-General the report of each registrar shows the births and deaths registered by him in the week up to Saturday night; it is transmitted to the central office early on Monday; the return is made up on that day, printed on Tuesday, and published on Wednesday. A day is therefore lost in the preparation, in consequence of the intervention of Sunday. But the Registrar-General (Major Graham) makes no charge for his returns, though he might plead for that course a venerable precedent. He distributes them gratuitously to individuals, learned bodies, and newspapers,—to those who apply for them, who take an interest in them, and are likely to turn them to useful account.

Captain John Graunt, a citizen of London, and F.R.S., who lived in Birchin Lane, published his "Natural and Political Observations on the Bills of Mortality," in 1662. He reckoned that there had been 399,910 deaths in thirty-three years (1629-1661), and by a process which he has described, he estimated the population at 403,000\* in the last of those years. Hence it would be inferred that the annual rate of mortality did not much exceed 3 per cent., an estimate which may be conjectured to be considerably under the mark for those days of terrible visitation. While the annual deaths were, on an average, 12,119, the births were only 8,201; and this defect of births, as compared with deaths, pervades the bills even in healthy years,—a dispensation of which we, in the present returns, happily witness the reversal. In another place Graunt computes the burials in 40 years (1604-43) to be 363,935, and the christenings 330,747 in 123 parishes, (Westminster and other 6 parishes not being included,) giving for the former an annual excess of only 830. He refers the excess to other causes besides a high rate of mortality. The registered christenings were deficient because (1), theological opinions were entertained by some, unfavourable to the baptismal rite; (2) there were occasionally religious scruples on the part of Christian ministers regarding the worthiness of parents to have their children baptized; and (3) what probably formed the chief difficulty, there was a small fee for registration.

But still more grievous causes of debilitation prevailed, and time, which destroyed the people of London, gradually destroyed also the bills of the "Worshipful Company of Parish Clerks" which recorded the births and deaths of that people. In the lapse of years they have suffered severe dilapidation; the number of their baptisms and burials has dwindled to the smallest proportions. Parishes neglected to make their returns; parish clerks were idle or contumacious, and could not be prevailed on to do their duty. It may be noticed here that a defect had been inherent in the organization from the beginning, arising from the circumstance that it belonged to a church which did not embrace the whole population; for all Roman Catholics

\* In another place he calculated the population at 384,000, or about that of the city of Glasgow at present.

escaped enumeration at baptism, and nearly all at death. It is even stated that persons consigned to burial-places under the jurisdiction of the Church, but not of a parochial character, such as those of St. Paul's, Westminster Abbey, Charter House and other Hospitals, the Temple, &c., were not included in the bills. Dissent flourished, and dissenters would have nothing to do with the parish clerk, whose very name was a stench in their nostrils; and their bodies were buried in cemeteries, beyond parochial supervision. The parish of All Saints, Northampton, once enjoyed the privilege of being supplied with elegiac verses for its annual bills by one who was incomparably the best poet of his time. The company of parish clerks of London enjoyed no such advantage. There were citizens of credit in abundance, but none apparently who had a turn for composition; and the bills, destitute of poetry, became almost as miserably deficient in fact. Let the bill for the week ending Tuesday, April 4th, (the current month,) speak for itself. In the 97 parishes within the walls, 17 parishes without the walls, 24 out-parishes in Middlesex and Surrey, 10 parishes in the city and liberties of Westminster, there were actually 18 baptisms and 19 deaths—about 1 baptism and 1 death to 8 parishes. If this return be correct London is favoured among cities in its rate of mortality; but dry-nurses and undertakers demand our sympathy, for manifestly their occupation is gone.

But let it be distinctly understood that we entertain nothing but respect for the old bills of mortality, which served their day and generation, and have contributed to English history much valuable and interesting information.\* The new system of registration for England and Wales commenced on July 1st, 1837; and under the Act establishing it, it is necessary that a clergyman, or person who has charge of the funeral ceremony, before committing a body to the grave should be provided with a certificate from the registrar of the sub-district in which the death occurred, or otherwise should give notice to the registrar within seven days. A violation of the Act in this particular is made subject to a penalty. Soon after the Act came into operation the Registrar-General resolved to supply a want which had been much felt,—to issue a series of weekly returns, which would accomplish their object in a manner more satisfactory to the public than the bills of the parish clerks. The first was for the week ending January 11th, 1840, and the series has been continued from that time without interruption. The district of Wandsworth was added in 1844, those of Lewisham and Hampstead in 1847. London, as now constituted, is composed of 36 districts and 135 sub-districts. The return as published, therefore, presents an analysis of the reports

\* In the first thirty years of the present century the bills had undergone a visible improvement. In the Annual Bill for 1833, the christenings were 27,090, the burials 26,577. These numbers show the excess on the right side. In the Bill for 1837, occurs the following notice: "By the operation of the New Registration Act much difficulty has occurred in obtaining the reports of christenings and burials; in consequence of which, in some parishes, the reports have been wholly withheld; and in those of several other parishes where the office of searcher has been discontinued, the diseases by which deaths have taken place, have been necessarily omitted." The respectable functionary referred to has left the scene; and the medical man, with his book of blank forms, to be filled up with primary and secondary diseases, and their duration, has taken her place.

of 135 registrars. They are supplied with blank forms, into which they are required, at the close of each week, to copy from their register books the age, sex, and profession of each person whose death they have registered; the place, date, and cause of death; to state any facts relating to the condition of houses, the spread of epidemics, or to give other useful information; and also to report the number of male and female births. "Births" were added to the return in 1845. In 1844, and up to the present time, the returns have been enriched with copious and minute meteorological observations with which the Registrar-General has been favoured by the Astronomer Royal. It is scarcely necessary here to mention that the department of vital statistics, in which the weekly, quarterly, and annual publications are prepared, is under the superintendence of Mr. Farr, whose valuable reports are well known in the world of science, and have lately become particularly interesting to persons conversant in the subject of life insurance. A "Statistical Nosology" was prepared with much pains, and placed in the hands of the medical profession in 1843; and in 1845 instructions to coroners were drawn up, on the registration of causes of violent deaths, drowning, fractures, suicides, murders, &c.,—a class of facts, the investigation of which should yield the most important results; and to these instructions it is therefore desirable in a high degree, that coroners should give the fullest measure of consideration, and carry them out to the utmost extent that in any circumstances is found practicable. The Registrar-General effected, in 1845, an immense improvement in the machinery of registration by distributing books containing blank forms of certificates of fatal diseases to all qualified medical practitioners.

The weekly return, as now published, consists of the following parts:—Remarks on the "Health of London during the Week," presenting the most striking features in the tables, and such interesting and important facts as the registrars may have gleaned in the exercise of their vocation; tables of births and deaths, distinguished according to sex, with the numbers and their averages in corresponding weeks of previous years; a table of fatal diseases, with the numbers referred to them distributed in three periods of life, (under 15 years, 15—60 years, 60 and upwards,) also the number of deaths from each disease in the corresponding weeks of ten previous years; a table of the deaths in districts, in juxta-position to the deaths in the same districts in ten corresponding weeks; a table of the deaths registered in the week in 47 workhouses, in 9 military and naval asylums and hospitals, in 21 hospitals, in 20 lunatic asylums, in 16 prisons, and in 2 hospitals for foreigners; and, lastly, the table of meteorological observations made at the Royal Observatory, Greenwich.

London is eminently aggressive in its relation to the surrounding country, and it now encircles within its arms an area far exceeding that which John Graunt surveyed when he wrote his Observations. The London of the modern bills of mortality, as published by the Registrar-General, and also as the term is used in his Quarterly and Annual Reports, embraces an extent of 122 square miles, on which surface are planted (according to the census of 1851,) 305,933 inhabited houses, in some places thick-set, and not least in the Tower "Hamlets,"—in others straggling in almost rural superfluity of space.

The population live in a density varying from 2 persons to an acre in Lewisham to 284 in St. Botolph and Cripplegate, and at an elevation varying from 3 feet below high-water mark in part of Camberwell to 350 above it at Hampstead.

Of all directions in which the metropolis shoots from its centre, the westward seems to have been ever the most approved; and the early manifestation of this tendency is curiously illustrated by Graunt in the following passage: "The general observation which arises from hence is, that the city of London gradually removes westward; and did not the Royal Exchange and London Bridge stay the trade, it would remove much faster, for Leadenhall Street, Bishopsgate, and part of Fenchurch Street have lost their ancient trade; Gracechurch Street, indeed, keeping itself yet entire by reason of its conjunction with, and relation to, London Bridge. Again Canning Street and Watling Street have lost their trade of woollen drapery to Paul's Churchyard, Ludgate Hill, and Fleet Street. The mercery is gone from out of Lombard Street and Cheapside into Paternoster Row and Fleet Street."

Sir William Petty,\* to whom the authorship of the "Observations" has been attributed without sufficient reason, published his "Essay in Political Arithmetic" in 1683, in which he presented an estimate of the area, houses, and population of London within the bills of mortality at that time. The area was less than 1,500 acres; he had been credibly informed there were 84,000 tenanted houses, and he reckoned 8 persons to each, (a proportion which entirely agrees with the last census of the whole metropolis); the population would, therefore, be about 670,000. He attempted to confirm this result by another process:

Graunt had estimated the rate of mortality as 1 death per annum out of 32 living, "over and above what dies of the plague." Petty adopted 30 for the right number, by which he multiplied 22,331, the annual deaths in the last two years, and thus obtained the population.

The mean of deaths in the years	1604-5	was	5,135
"	"	1621-2	" 8,527
"	"	1641-2	" 11,883
"	"	1661-2	" 15,148
"	"	1681-2	" 22,331

Now the third of these numbers is about double the first, and the fourth about double the second; the third and fourth are double the first and second, the fifth about double the third, the fourth and fifth about double the second and third, the last three double the first three, and the last quadruple of the first. The series of years running in quadragesimal periods, he made the rather loose assumption that the population increased in the same ratio as the deaths, and thence con-

\* Internal evidence is strongly opposed to this supposition, which appears to be countenanced by Mr. Macaulay. Graunt's crabbed, almost ferocious style, is unlike that of the genial and accomplished physician, and the adulation or superstition which led the Captain to refer the exemption of the year 1660 from the plague to the restoration of his royal patron, who procured him admission to the Royal Society, would not have qualified Petty for the praise of his praised contemporary, Pepys, who says that "in discourse he was one of the most rational men he ever heard speak with a tongue." Evelyn, who claims Graunt's work for Petty, is still more profuse in his commendation.

cluded that it doubled itself in 40 years. It is a somewhat remarkable fact that the censuses of 1801-11, and 1841-51, disclose the same rate of increase. When Maitland, who is probably more to be depended on, made his survey in 1738, or 56 years later, he estimated the population at 725,903 persons, who lived in about 96,000 houses, the former number falling exceedingly short of what the true number must have been if Petty's calculation were correct. It appears likely that Sir William both understated the rate of mortality, which may have been nearer 5 per cent., and overstated the rate of the people's growth. The area within the bills differed at the period of Petty's estimate and that of Maitland's only by the addition of St. Mary-le-Strand and the duchy of Lancaster; and the numbers of persons within this area in 1801 were 744,803; in 1811, 854,337; in 1821, 1,010,577; in 1831, 1,179,096; in 1841, 1,351,396; in 1851, 1,583,748.\* Allowing a wide margin for erroneous conjecture, and not overlooking the greater repletion of the space within the bills, and the consequent eruption of the inhabitants into the freer ground beyond them, it is still difficult to avoid the conclusion that the power to multiply and replenish, in the eighteenth century, had been much depressed.

The condition of the metropolis is made up now as then of the most heterogeneous elements; it contains the extremes of wealth and penury, and of all degrees between them; different ranks, different races, and the most diversified occupations; wretchedness in the teeming alleys, and comfort in spacious squares and suburban mansions. To analyze this condition, and exhibit its various effects in the life and death of the population, is a work which demands further prosecution; evidently it would involve much detail and immense labour.

For the purpose of a rough comparison the Registrar-General has divided London into five great divisions: the West, North, Central, East, and South Districts. These, with the exception of the South District, stretch along the north bank of the river from Hammer-smith to Bow and Bromley, while the southern portion extends on the opposite bank from Putney and Streatham to Woolwich.

On the ground, as thus described, there lived in 1840 a population of 1,913,344, and in 1853 a population of 2,468,362, having increased in fourteen years by 29 per cent. The metropolis contained 555,018 more persons in the latter year than in the former. Into the population thus increasing there passed, in the 14 years, (1840-53,) 973,196 persons by birth, and 747,313 went out of it in the same time by death. The excess of births is 225,883. Immigrants numbering more than 329,000, or 23,500 *per annum*, must have come from other parts to London in the same period to supplement the increase, ascertained from the census, in so far as the total increase exceeds the natural. But as thousands leave London through other portals than those of the invisible world, a much greater number of arrivals was requisite to compensate for the departures, and produce the increase. The publication of the Census Returns of 1851, when completed, and of those of future years, will throw some light on the infusion of the rural population into London. The emigration office

\* See Census of 1851, division I., page 43. Maitland's estimate scarcely differs from the result ascertained by the Census of 1801.

furnishes the number of persons leaving the port of London, but not the number of its resident population who sail to other shores. Some carry their industry to the west; others, impelled by the *sacra fames auri*, seek Australian homes; and probably the number of Londoners who emigrate is as great in proportion as that of the rural population, for though they may not be so well adapted to such pursuits, they are more adventurous, and better provided with the means of locomotion. Mr. Corbyn Morris, who wrote on the bills of mortality a hundred years ago, argued that the improvement of roads in his time tended more to empty London than to fill it; for while persons called to the capital on business conquered all obstacles and dared all dangers, and would obtain their object in all circumstances, those who wished to leave it for quiet and recreation enjoyed improved opportunities of gratifying their desire. The same remark applies to the far greater facilities of our day; outports more accessible to the navigation of both worlds increase in importance, and trades and manufactures find their seats in the country, which at other times would have contributed to the hypertrophy of London.

With reference to sex, it is an established rule, that of children born, the number of males exceeds that of females; and through the series of years 1840-53, the annual registration furnishes no exception to it. On an average, about 1,400 more boys than girls were thrown into the population of London yearly. Taking the whole fourteen years, the proportion was as 104 to 100. It follows that the registers of deaths will discover a similar excess, though this is not perceived to the same extent, because the duration of life is greater in females, and according to the constitution of the population, the number of females exceeds that of males. The mortality of males has always been greater than that of females, and probably more women migrate *into* London, and more men migrate *out* of it. There died annually on an average about 800 more males than females. The proportion in the whole series of years was as 103 to 100. The only year which violates this law of sex is 1849, when cholera raged in the metropolis; though another epidemic year, 1847, when influenza was prevalent, produced numbers of males and females nearly approximating to each other. In 1849, the deaths as obtained from the weekly returns were, of males, 34,032, of females, 34,400; of which exceptional result an explanation will be found in the Registrar-General's Report on Cholera, where it is stated (page 5) that 6,701 males, and 7,436 females, died of cholera. As a general rule, the mortality of females from cholera does not exceed that of males. In London, it was in excess only above 35 years of age; at all ages it was rather less than that of the other sex. But it may be worth while to inquire whether in large towns, such as London and Liverpool, the choleraic poison from house-drains is not more fatal to women, who, being confined within the close precincts of their homes, are more exposed to its influence.

Dividing the series of 14 years (Table A.) into two equal periods, it appears that the births have increased at the rate of 19 per cent.; that the deaths have increased at the rate of 18 per cent.\*; whilst the

\* Absolute increase, *i. e.*, without reference to increase of population.



increase of population, taking it in the middle of each period, has been 14 per cent. The annual rate of mortality in the last 7 years (as shown by Table D,) was on an average 25 out of 1,000 living; rising so high as 30 in the year of the cholera epidemic, and falling so low as 21 in the year following, the two years presenting the maximum and minimum of the series. Influenza, which preceded cholera, and, towards the end of 1847, swelled the weekly returns to an amount unprecedented in the new registration, raised the mortality of that year to 27 in 1,000. In the seven years ending 1853, there were 44 persons living to 1 who died, in the west districts; the same number is found in the north districts; in the central, there were 40 living to 1 death; in the east, there were 38; and on the south side of the river, only 37. Persons who reside near Regent's Park and many other parts that could be mentioned, judging from their individual experience, probably consider that London is all that could be wished in point of salubrity; and inhabitants of provincial towns who visit the capital occasionally, and can choose their lodging in any part of it, may find themselves positively benefitted by the change; such indeed may have no cause to be dissatisfied with their position, but it is nevertheless true that places of very different character may be in close proximity, and that in the above representation, which shows London *in the mass*, or only in five great divisions, if the unhealthy parts darken the character of the healthy, the best parts do as much relieve the darkness of the worst. It is readily admitted that this metropolis may challenge comparison with continental cities,—with Constantinople, where the annual mortality has been reported at 5·7 per cent.; with Vienna, where it is 4·5 per cent.

The population of London is not the most healthy, and it is not the most unhealthy, in England. It has been shown that the inhabitants of the metropolis die at the rate of 25 out of 1,000 living per annum. London contrasts rather unfavourably with England (including London itself, other large and small town populations, and country districts), in which the rate of mortality was, in 1838-44, 22 out of 1,000. It contrasts much more unfavourably with such parts as Westmoreland and North Wales, where the numbers are 19 and 18; in parts of the latter, dropping so low as 16. But Liverpool and Manchester do their best to keep London in countenance, for, in the former of these towns, the rate of mortality was in the same years 34, and in the latter town 33. In all the three towns, the waste of infantile life is excessive, and loudly calls for perseverance in all plans of cure or alleviation which central and local legislatures or private benevolence can suggest. In London, the destruction of life under 1 year is at the rate of 207 in 1,000; in Liverpool, it is 280; in Manchester, it is 293; whilst in Westmoreland, it is only 119. In London, children under 5 years of age die at the rate of 87 in 1,000; in Liverpool, at the rate of 136; in Manchester, at the rate of 129; in Westmoreland, only 45 die. Nearly twice as many die at that age in London, and three times as many in Liverpool, as in the high and open regions of the north.

The unhealthiness of London, or, as Graunt expresses it, of its smokes, stinks, and close air, has been long known, especially in regard to young persons and to "those bodies which (as he says)

have not been seasoned to it." That morbid habit produced by it, which Sir James Clark has designated *cachexia Londinensis*, drives all who happily possess the means and opportunity, to recruit on the sea-coast or the Highlands, and to live, with their families, as much out of it as business permits, and as far as carriage accommodation enables them to go and come. *Mercator laudat rura*. Mr. Morris, whose lucubrations, a hundred years old, have been referred to, appeals to the country gentlemen, and entreats them to regulate "the policy of London," as their peculiar office, because it concerns them even more than persons resident in town. He calculates that in the 63 years from the year of the revolution to 1750, both included, above 500,000 persons had been drawn from the provinces to fill the gaps in the London population. And what had been the consequence? For many years the want of day-labourers had increased. Farmers complained of the high price of labour and the impossibility of obtaining it in sufficient quantity. The great sources of national wealth had been attacked; the produce of corn, wool, and other raw material, had been diminished; the increased price of provisions had tended to make manufactures expensive and prevent their exportation; to encourage the importation of cheaper from abroad, and to drive from the country that wealth which their more prudent ancestors had bequeathed to them. This apostrophe to country gentlemen "all of the olden time," may be not unprofitably addressed to their modern representatives. They have been persuaded into giving us cheap corn. Let them co-operate now with the burgesses in improving the dwellings of the poor, both in town and country—in pouring into the houses an abundance of water, both cheap and good—in providing efficient drainage; and by these and whatever means are in their power promoting the public health and sweetening the breath of society in England, and they will do much to reduce within bounds that flow of emigrants which threatens even on our side of the Irish channel to become an *exodus*. Thus the marriage of town and country interests will be consummated.

A table (B) accompanies this paper, in which the rise and fall of mortality throughout the fifty-two weeks of the year are shown, and in which the influence of season is also developed in months. The results are derived from the returns of each week in fourteen years, and are therefore very valuable, though it will be proper to bear in mind that the deaths are, on an average, not registered till a few days after they have occurred. Running the eye down the column, it will be seen that the deaths range above 1,100 for the first three weeks; from that period till the second week of April, they fluctuate between 1,100 and 1,000; from this time till the 19th of May, they run at the weekly number of 900 and more; they then drop to 800 and more, till near the end of June; again they run in nines till the end of July; in August, and till the second week of October, they rise to upwards of 1,000, during which time summer cholera is active; again they drop to the nine hundreds till the second week of November, when they mount to 1,000; and throughout December the population are again dying at the rate of 1,100 a-week. The real facts are masked in some degree in the table at certain points, in consequence of coroners' inquests being registered

in undue number at the termination of each quarter; but to meet the error, a correction may be easily applied. The healthiest part of the changing year is that which comprises the end of May and the whole of June, when the mean temperature is  $59^{\circ}$ ; the unhealthiest months are the first and last of the year, January and December, when the mean daily temperature is  $40^{\circ}$ , and  $38^{\circ}$ . Two periods are unhealthy but in different degrees: the first extending over December, January, February, March; the second less unhealthy, embracing August and September. In August the heat of the air is about the same as in July,  $61^{\circ}$ , the greatest in the year; in September it descends to  $56^{\circ}$ . Two periods are healthy, also in different degrees: the healthier spreading over April, May, June, July; the other corresponding with October and November, when the temperature is  $49^{\circ}$  and  $44^{\circ}$ .

We proceed to pass a few of the more prominent facts in the tables of causes of death rapidly under review. The diseases that flesh is heir to, or acquires by ill-directed industry, are distinguished into seventeen classes, though the term "sudden deaths," which designates one of them, indicates not a cause, but the cause not being sufficiently ascertained, or, at least, not returned, it denotes the accident of time in relation to the effect (Table C). Out of 100 deaths thus classified, and which occurred in the fourteen years 1840-53, 24 are referred to zymotic or epidemic diseases; 5 to dropsy, cancer, and other diseases of uncertain or variable seat; 18 to tubercular diseases; 12 to diseases of the brain and nervous system; 3 to diseases of the organs of circulation; 15 to diseases of the respiratory organs; 6 to diseases of the digestive organs; 1 to diseases of the kidneys, &c.; 1 to childbirth (exclusive of puerperal fever in the last six years) and diseases of the uterus, &c.; 0.7 to rheumatism (exclusive of rheumatic fever in the last six years) and other diseases of the organs of locomotion; 0.1 to diseases of the skin; 0.2 to malformations; 2.4 to debility (consisting, to a great extent, of cases of premature birth); 1.8 to atrophy, the term which apparently has superseded the "planet-struck" of the old bills; 5 to age, or natural decay; 1 placed to "sudden;" and 3 are the result of violence, privation, cold, and intemperance. By far the most fatal, it will be seen, is the epidemic class; and the proportion of deaths in it rising to so high a figure as 24, or nearly a fourth of the whole, is an unfavourable symptom of the health of London.

Dividing the fourteen years into two periods of seven years each, and taking the population at the middle of each period, it appears to have increased 14 per cent. The deaths from zymotic diseases in the first seven years were 64,462, in the last seven years 108,648, showing an increase of 45\* per cent, the necessary allowance being made for increase of population. Both influenza and cholera having fallen on the latter period, have been mainly instrumental in producing this formidable result. Diseases of the second class exhibit a decided decrease,—a result, which, with reference to some of them, such as dropsy, hæmorrhage, abscess, is doubtless due to great improvement of late years in the method of returning the causes of death,—

\* The table shows 47 per cent., but a deduction must be made for metria and rheumatic fever, which were not classed with zymotic diseases till 1848.

primary and secondary diseases being distinguished in the medical certificates. Tubercular diseases manifest considerable uniformity, for in the first septennial period 66,091 persons died from them; in the last the number was 66,883. They decreased from an annual number of 465 out of 100,000 living, to 410 out of the same number of the living. The class comprehended scrofula, tabes mesenterica, phthisis, and hydrocephalus. The figures, representing a decrease, may be explained more or less by the fact that many persons suffering under these complaints ultimately fell victims to one of the two epidemics. From diseases of the brain and nervous system there died 42,181 in the former septennial period, 43,619 in the latter,—a positive decrease, taking the population of the two periods into account. Diseases of the heart, &c., latterly recognised by auscultation, have risen from 9,366 to 14,394, or more than 30 per cent. Diseases of the organs of respiration rose from 48,854 to 63,862, an increase of 14 per cent. Diseases of the organs of digestion were stationary, or virtually decreased, the respective numbers having been 22,525 and 22,659. The cases in which disease of the kidneys was fatal rose from 2,516 to 4,448, an increase amounting to 50 per cent. Diseases of the skin discovered an extraordinary excess in the latter period, for the deaths in this class were respectively 277 and 688, showing an increase of 100 per cent., taking, as before, population into account. Fatal malformations were also doubled, producing 617 and 1,303 deaths. Deaths in the last class, viz., those caused by intemperance, want, and external injury, increased at the rate of 25 per cent. Deaths from all causes increased 18 per cent., a rate of increase which exceeds that of the population taken, as stated above, at the middle of the two periods, this latter being 14 per cent.

Smallpox was less fatal in the latter septennial period than the former. In the fourteen years it destroyed 12,093 lives in London. In one year (1844,) it killed as many as 1,804; last year (1853,) was less fatal than any other, for the number who died from this foul disease was only 217. The next fourteen years will show how far legislation can control its power if it is not able to effect its expulsion. What remains to be done the above figures show; what medical science *has* done is manifest from the old bills of mortality, in which our ancestors of 1725 and 1757 read that upwards of 3,000 died in those years of this disease out of a population small as compared with the present.

With regard to measles and scarlatina, the mortality of the former diminished; that of the latter increased 25 per cent. in the two periods. The former destroyed upwards of 17,000 persons, the latter upwards of 26,000. Hooping cough destroyed nearly the same number as scarlatina. The deaths from croup decreased; those from diarrhoea rose from nearly 6,000 to nearly 16,000. Dysentery,\* the scourge of former days, and which slew, towards the end of the 17th century, more than 3,000 persons in a year, was not fatal even in the cholera year to more than 370. We all know how cholera has afflicted these latter times; in 1849, 14,125 sunk under its stroke. In 1847 influenza carried off 1,253 persons, and was the indirect cause of many deaths. Typhus speaks in a voice of warning, the deaths in the two

\* It included "gripping," &c.

periods having been 10,463 and 18,314, showing an increase of no less than 53 per cent.

Phthisis exhibits a remarkable constancy, never varying throughout the series from 6,000 and 7,000. Scrofula has increased, the number in the first three years being about 100; in 1852 and 1853, being upwards of 400. Cancer has risen from about 500 to double that number. Deaths after childbirth averaged 419 in a year. The births averaged 68,810; hence it follows that parturition, or diseases incidental to it, was fatal in approximate numbers to 6 women out of a thousand in that state. Graunt came to the conclusion that 10 was about the proportion. Furunculoid disease has recently been much more prevalent and fatal. The deaths from carbuncle, which were 5 or 6 in the earlier years, considerably increased in the last seven years, and have suddenly risen to 50 and 70 in the last two.

Graunt rejoiced that in his day "few were starved." Our modern bills reveal thirty and forty in a year, a number much too large for congratulation. This is exclusive of 225 infants who die in a year from want of breast-milk. Graunt excluded the same class, and reckoned that only 2 or 3 in a year died of privation. There can hardly be any question that this flattering picture was not a true one. He describes the beggars as swarming up and down, and most of them healthy and strong, and asks whether it would not be better for the state to keep them "although they earned nothing." He would cure them of their diseases and teach them to work; but he would not send all the beggars of London "to the West country to spin, where they would only spoil the clothier's wool."

Intemperance adds to the number of its victims at least as fast as the population increases. In spite of teetotal societies, and the whole machinery of tracts and lectures in full work, it is to be regretted that the annual victims of excess in spirituous liquors have latterly been so numerous as eighty or ninety. In 1846, 90 persons died from intemperance. In 1853, the number was 88. But this is not a complete statement of the case, for delirium tremens, which is almost invariably the result of intemperance, destroyed in 9 years an average annual number of 142 lives. To these are to be added frequent cases of fatal injury received in a state of inebriety.

The general conclusion at which we arrive is, that while the total mortality of London has increased in the course of the fourteen years 6 per cent., the mortality from zymotics—typhus, scarlatina, &c.—has made more alarming progress; these diseases, if not generated, being much propagated by over-crowding, dirt, and other remediable causes.

We may never arrive at that redundancy of health which Lucian described, when he stated that out of 1,000 deaths, 398 occurred above sixty years of age; but the improvement of the health of London and also of medical diagnosis will be shown, the former by the reduction of the deaths assigned to zymotic diseases, the latter by a decrease of deaths classed under the heads "sudden" and "old age," and by the relative increase of those referred to paralysis, apoplexy, and disease of the heart; these last indicating that inevitable hardening of the arteries and vessels in natural decay by which man sinks into friendly death as into a SLEEP.

*Violent Deaths.*

The Registrar-General, in his Sixth Annual Report, remarks that "the violent deaths in England appear to be nearly twice as frequent as in the other countries of Europe from which returns have been procured." The Report contains an elaborate analysis of 10,881 deaths in England in the year 1840—by mechanical injury, drowning, hanging, and suffocation by other means, burns and poison, by suicide, murder, manslaughter, accident, &c.—and the persons who suffered such violent deaths are classified according to their professions. The deaths in recent years have not yet been subjected to complete analysis, and at present it can only be stated that the violent deaths in London were in 1848, 1,516; in 1849, 1,395; in 1850, 1,511; in 1851, 1,642; in 1852, 1,756; and in 1853, they were 1,955. The total in the six years was 9,775. Of these 9,775, there were 550 by poison, 1,473 by burns and scalds, 1,339 by hanging and suffocation, 1,848 by drowning, 3,618 by fractures and contusions, 627 by wounds by gunshot and sharp instruments, and 320 by other means undefined.

TABLE A.

*Births and Deaths Registered in London in Fourteen Years (1840-53).*

Years.	Births.	Deaths.	Excess of Births over Deaths.
1840.....	57,439	47,809	9,630
1841.....	59,097	46,899	12,198
1842.....	62,111	46,805	15,306
1843.....	62,892	50,029	12,863
1844.....	65,186	51,720	13,466
1845.....	66,751	48,919	17,832
1846.....	70,866	50,123	20,743
1847.....	68,331	59,131	9,200
1848.....	71,380	57,771	13,609
1849.....	72,612	68,755	3,857
1850.....	74,564	48,950	25,614
1851.....	78,300	55,488	22,812
1852.....	81,235	54,732	26,503
1853.....	82,432	60,182	22,250
Total .....	973,196	747,313	225,883

*Note.*—In this table the year begins January 1st and ends December 31st, and therefore the numbers in it do not *exactly* correspond with those derived from the Weekly Returns, which comprise 52, and, in two instances, 53 weeks.

TABLE B.

LONDON.—Deaths in Weeks and Months; Averages derived from the Weekly Returns of Fourteen Years, 1840-53; with Meteorological Observations made at Greenwich.

Number of Week.	Average Day on which 14 corresponding weeks of 1840-53 ended.	Average Number of Deaths in 14 corresponding weeks of the years 1840-53.	Minimum Number of Deaths in 14 corresponding weeks of the years 1840-53.	Maximum Number of Deaths in 14 corresponding weeks of the years 1840-53.	Average Monthly Deaths in the 14 Years. — The Deaths of 4 or 5 weeks are reduced to Deaths of 30 days.	Mean Monthly Temperature of the Air at Greenwich in 13 years, 1841-53.	Mean Monthly Humidity of the Air at Greenwich in 13 years, 1841-53.
1...	Jan. 6	1,187	869	1,510	January		(12 years,
2...	" 13	1,123	929	1,457	(30 days)		1842-53)
3...	" 20	1,110	916	1,401	4,728	38° 3	0·885
4...	" 27	1,063	835	1,457			
5...	Feb. 3	1,033	780	1,478			
6...	Feb. 10	1,056	813	1,324	February		(12 years,
7...	" 17	1,042	855	1,235	(30 days)		1842-53)
8...	" 24	1,086	911	1,328	4,550	38° 8	0·872
9...	Mar. 3	1,063	896	1,344			
10...	Mar. 10	1,051	860	1,427	March		(12 years,
11...	" 17	1,068	792	1,436	(30 days)		1842-53)
12...	" 24	1,053	770	1,412	4,598	41° 8	0·825
13...	" 31	1,119	832	1,418			
14...	April 7	1,031	780	1,748	April		
15...	" 14	964	816	1,340	(30 days)		
16...	" 21	969	809	1,243	4,184	46° 5	0·802
17...	" 28	941	783	1,182			
18...	May 5	912	756	1,089	May		
19...	" 12	909	761	1,159	(30 days)		
20...	" 19	909	734	1,099	3,864	53° 4	0·750
21...	" 26	897	795	1,098			
22...	June 2	881	736	1,128			
23...	June 9	888	786	1,023	June		
24...	" 16	868	750	1,009	(30 days)		
25...	" 23	872	742	985	3,816	59° 3	0·758
26...	" 30	934	751	1,217			
27...	July 7	904	745	1,103	July		
28...	" 14	895	757	1,369	(30 days)		
29...	" 21	950	744	1,741	4,014	61° 8	0·788
30...	" 28	997	749	1,931			
31...	Aug. 4	1,013	759	1,967	August		
32...	" 11	1,033	801	1,909	(30 days)		
33...	" 18	1,038	776	2,230	4,430	61° 1	0·810
34...	" 25	1,032	745	2,456			
35...	Sept. 1	1,052	788	2,796			
36...	Sept. 8	1,082	762	3,183	September		
37...	" 15	1,060	821	2,865	(30 days)		
38...	" 22	996	766	1,981	4,450	56° 8	0·827
39...	" 29	1,015	808	1,611			
40...	Oct. 6	1,005	794	1,290	October		
41...	" 13	930	786	1,075	(30 days)		
42...	" 20	929	771	1,106	4,083	49° 7	0·862
43...	" 27	947	774	1,116			
44...	Nov. 3	974	813	1,144	November		
45...	" 10	983	814	1,165	(30 days)		
46...	" 17	1,004	800	1,230	4,319	44° 3	0·885
47...	" 24	1,000	853	1,207			
48...	Dec. 1	1,078	852	1,677			
49...	Dec. 8	1,147	770	2,454	December		
50...	" 15	1,162	794	2,416	(30 days)		
51...	" 22	1,159	795	1,946	4,945	40° 4	0·889
52...	" 29	1,147	871	1,408			
Mean .....		1,011	799	1,537	4,332	49° 4	0·832

TABLE C.  
*Causes of Death in London in Fourteen Years, and the Deaths in Septennial Periods out of 100,000 Living.*

Estimated Population in 1843..... 2,030,411. 								
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TABLE D.  
(Published by the Registrar-General.)

London.	Area in Square Miles.	Annual Increase of Population per Cent. 1841-51.	Popula- tion, 1851.	Deaths, 1853.	Annual Mortality per Cent.*						Mean of 7 Years.	Living to 1 Death.
					1847-4	1848.	1849.	1850.	1851.	1852.	1853.	
<i>West Districts.</i> Kensington—Chelsea—St. George, Hanover Square—Westminster—St. Martin-in-the- Fields—St. James .....	16.9	2.49	376,427	8,937	2.450	2.361	2.613	1.964	2.206	2.144	2.212	44
<i>North Districts.</i> Marylebone—Hampstead—Pancras—Is- lington—Hackney .....	21.1	2.67	490,396	11,819	2.537	2.338	2.368	1.980	2.208	2.113	2.236	44
<i>Central Districts.</i> St. Giles and St. George — Strand — Hol- born — Clerkenwell — St. Luke — East London — West London — City of Lon- don .....	2.9	.48	393,256	10,081	2.789	2.533	2.791	2.114	2.415	2.365	2.497	40
<i>East Districts.</i> Shoreditch—Bethnal Green—Whitechapel —St. George-in-the-East—Stepney— Poplar .....	9.7	1.99	485,522	13,687	2.935	2.867	3.176	2.168	2.420	2.309	2.655	38
<i>South Districts.</i> St. Saviour—St. Olave—Bermondsey— St. George, Southwark—Newington— Lambeth—Wandsworth—Camberwell —Rotherhithe—Greenwich—Lewisham.	71.2	2.08	616,635	16,678	2.771	2.718	3.762	2.192	2.410	2.296	2.642	37
London .....	121.8	1.97	2,362,236	61,202	2.710	2.583	3.008	2.094	2.340	2.247	2.441	40

\* The Annual Mortality in this Table is deduced from the Population of 1841 and 1851, corrected for increase at each year, and the deaths registered in London in each of the several years, correction being made for the difference between 364 and 365.25636 days.

+ The Summaries of the Weekly Tables for the Years 1847 and 1853, contain the deaths in 53 weeks; in this calculation a correction has been made for the difference between 365.25036 and 371 days.



TABLE F.—*Parishes and Places within the Old and New Bills of Mortality, with their Areas.*

Parishes, &c.	Area in Acres.	Parishes, &c.	Area in Acres.
<i>Within the OLD BILLS, in 1603.</i>		<i>Brought forward</i> .....	
All the Parishes of the City of London within the Walls (except St. James's, Duke's-place, added in 1636) .....	421·8	St. Mary, Rotherhithe.....	886
St. Andrew, Holborn, then including St. George the Martyr .....	131	St. Dunstan, Stepney.....	911
Saffron Hill and other Liberties .....	56	then including	
St. Bartholomew the Less .....	4	Christchurch, Spitalfields .....	74
St. Bride .....	32·5	Old Artillery Ground.....	14
Whitefriars .....	9	St. George-in-the-East .....	243
St. Botolph, Aldersgate .....	25	St. Anne, Limehouse .....	308
St. Botolph, Aldgate .....	45	St. Matthew, Bethnal Green.....	760
East Smithfield Liberty .....	37	All Saints, Poplar .....	1,490
St. Botolph, Bishopsgate .....	40		
St. Dunstan-in-the-West .....	11	<i>The following were added, 1726.</i>	22,533
Rolls Liberty, &c. ....	13·5	St. Mary-le-Strand and Duchy of Lancaster, other Parishes, &c. }	23
St. George, Southwark .....	282	Tower of London, or St. Peter ad Vincula, Old Tower Without }	37
St. Saviour, Southwark, then including Christchurch, Surrey }	155	Inner and Middle Temple .....	21
Holy Trinity, Minorities .....	95		
St. Olave, Southwark, then including St. John, Horsleydown }	66	<i>Total within the Old Bills..</i>	22,618
St. Thomas, Southwark .....	94		
St. Giles, Cripplegate, then including St. Luke, Old-street . }	43	<i>NEW BILLS.</i>	
St. Sepulchre (Within and Without) .....	220	<i>In addition to the above, the following are contained in the New Bills, which were commenced Jan. 5th, 1840.</i>	
The Charterhouse .....	54	St. Luke, Chelsea .....	865
	10	Kensington .....	1,942
<i>The following were added, 1601-9.</i>	1,853·8	St. Marylebone .....	1,509
St. Bartholomew the Great.....	9	Paddington .....	1,277
Bridewell Precinct .....	8	St. Pancras .....	2,716
Holy Trinity, Minorities .....	6	Hammersmith .....	2,321
St. Clement Danes .....	43	Fullam .....	1,834
Clement's Inn and New Inn .....	1	St. Mary, Stoke Newington .....	639
St. Giles's-in-the-Fields, then including St. George, Bloomsbury }	123	St. Mary, Stratford-le-Bow .....	809
St. James, Clerkenwell .....	122	Bromley St. Leonard.....	619
St. Katharine by the Tower .....	380	Camberwell .....	4,342
St. Leonard, Shoreditch .....	23	St. Paul, Deptford .....	1,609
St. Mary, Whitechapel, then including St. John, Wapping . }	646	St. Nicholas .....	149
St. Martin-in-the-Fields, then including St. Paul, Covent Garden .....	174	Greenwich .....	2,013
St. Anne, Soho .....	80	Woolwich .....	1,696
St. James, Westminster .....	305	<i>The following were added 31 Dec., 1843.</i>	46,858
St. George, Hanover-square .....	26	Clapham .....	1,233
St. Mary Magdalen, Bermondsey .....	53	Battersea (exclusive of Penge)...	2,313
St. John the Baptist, Savoy .....	164	Wandsworth .....	2,478
	1,161	Putney .....	2,176
<i>The following were added, 1626.</i>	688	Tooting Graveney .....	561
St. James's, Duke's-place .....	11	Streatham .....	2,504
City of Westminster, St. Margaret .....		<i>The following were added 27 Dec., 1846.</i>	58,533
St. John the Evangelist .....		Hampstead .....	2,252
		Charlton, next Woolwich .....	1,312
<i>The following were added, 1636.</i>	6,796	Plumstead .....	3,715
St. John, Heckney .....	3,290	Eltham .....	4,350
St. Mary, Islington .....	3,127	Lee .....	1,273
St. Mary, Lambeth .....	4,015	Kidbrooke .....	755
St. Mary, Newington .....	624	Lewisham .....	5,789
Carried forward .....		<i>Total within the New Tables of Mortality .....</i>	78,029

*Population at Six Censuses within the limits of the Bills of Mortality, as constituted at different stages of their progress.*

London.	1801.	1811.	1821.	1831.	1841.	1851.
Within the OLD BILLS ..	746,233	856,412	1,011,948	1,180,292	1,353,345	1,585,807
NEW BILLS.						
Within the limits adopted in the four Censuses, 1801-1831.....	864,035	1,012,126	1,227,590	1,473,859	1,713,458	2,057,355
Within the limits adopted by the Registrar-Gen- eral in 1837-43 .....	928,816	1,098,554	1,328,684	1,594,890	1,872,365	2,264,651
Within the limits adopted by the Registrar-Gen- eral in 1844-6.....	946,464	1,120,926	1,356,174	1,627,980	1,912,220	2,315,415
Within the New Tables of Mortality in 1847, and as now constituted	958,863	1,138,815	1,378,947	1,654,994	1,948,417	2,362,236

Mr. Hammack, of the Census Office, who kindly supplied the writer of this paper with the above list of parishes and their respective areas, has referred him to the following passage in Cunningham's Handbook of London:—

“ London, at the accession of James I., was said to contain little more than 150,000 inhabitants. At the Restoration of Charles II., in 1660, it was calculated by John Graunt, a resident in the city, and Fellow of the Royal Society, that there were about 120,000 families within the walls of London. ‘The trade and very city of London,’ he says, ‘removes westward, and the walled city is but one-fifth of the whole pile.’ Before the Restoration, says Sir Wm. Petty, the people of Paris were more than those of London and Dublin put together, ‘whereas now (1687), the people of London are more than those of Paris and Rome, or of Paris and Rouen.’ Petty’s tables differ occasionally, but the result of his inquiries, and he paid great attention to the subject, seems to have been that in 1682, there were about 670,000 souls in London, within and without the walls; that in 1684 the burials were 23,202, or 446 per week; that in 1687, the entire population was 696,000. But this, I am inclined to think, is a little above the mark, Gregory King fixing the population in 1696, at only 530,000, and the Population Returns of 1801 (113 years afterwards), at only 864,845. The burials in 1707, were 21,600; in 1717, 23,446; and in 1718, 26,523, much the same, it will be seen, as Petty’s estimate in 1684. \* \* \* \* The fire of London destroyed a fifth of the houses, or 13,000 out of 65,000. In 1687, it was calculated by Sir W. Petty, that London contained about 87,000 houses.”

In 1631, the lord mayor returned “the number of mouths esteemed to be in the city of London and the liberty” as amounting to 130,268, the result of an enumeration of the several wards.\*

\* Maitland’s “History of London.”

TABLE G.

*Deaths from the Four Great Plagues of the Seventeenth Century, in the Old Bills; and from Cholera, in 1849, in London as now constituted.*

Years.	Plague.	All Causes.
1603.....	36,269	42,042
1625.....	35,417	54,265
1636.....	10,400	23,359
1665.....	68,596	97,306
Means ...	37,671	54,243

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Year.	Cholera.	All Causes.
1849.....	14,125	68,755

As compared with deaths from all causes, those from plague were 69 per cent., those from cholera 21 per cent.

Nearly as many died from plague in 1665, as from all causes in 1849.

*Deaths from Small Pox in the last Fourteen Years, within London, as now constituted.*

Years.	Small Pox.	Years.	Small Pox.	Years.	Small Pox.
1840.....	1,235	1845.....	909	1850.....	498
1841.....	1,053	1846.....	257	1851.....	1,066
1842.....	360	1847.....	955	1852.....	1,166
1843.....	438	1848.....	1,617	1853.....	217
1844.....	1,804	1849.....	518		

Mean annual deaths in 14 years (1840-53) ..... 864

Mean annual deaths in 14 years (1745-58) ..... 1,950

*Deaths from Small Pox and Plague in London in the Years 1629-36 and 1647-79.*

Years.	Small Pox and Flox.	Plague.	Years.	Small Pox and Flox.	Plague.	Years.	Small Pox and Flox.	Plague.
1629	72	....	1652	1,279	16	1666	38	1,998
1630	40	1,317	1653	139	6	1667	1,196	35
1631	58	274	1654	812	16	1668	1,987	14
1632	531	8	1655	1,294	9	1669	951	3
1633	72	....	1656	823	6	1670	1,465	....
1634	1,354	1	1657	835	4	1671	696	5
1635	293	....	1658	409	14	1672	1,116	5
1636	127	10,400	1659	1,523	36	1673	853	5
			1660	354	14	1674	2,507	3
1647	139	3,597	1661	1,246	20	1675	997	1
1648	400	611	1662	768	12	1676	359	2
1649	1,190	67	1663	411	9	1677	1,678	2
1650	184	15	1664	1,233	6	1678	1,798	5
1651	525	23	1665	655	68,596	1679*	1,967	2

\* After 1679, the plague entirely disappeared.

Years.	Small Pox and Flox.	Years.	Small Pox and Flox.	Years.	Small Pox and Flox.
1680.....	689	1707.....	1,078	1733.....	1,370
1681.....	2,982	1708.....	1,687	1734.....	2,688
1682.....	1,408	1709.....	1,024	1735.....	1,594
1683.....	2,096	1710.....	3,138	1736.....	3,014
1684.....	1,560	1711.....	915	1737.....	2,084
1685.....	2,496	1712.....	1,943	1738.....	1,590
1686.....	1,062	1713.....	1,614	1739.....	1,690
1687.....	1,551	1714.....	2,810	1740.....	2,725
1688.....	1,318	1715.....	1,057	1741.....	1,977
1689.....	1,389	1716.....	2,427	1742.....	1,429
1690.....	778	1717.....	2,211	1743.....	2,029
1691.....	1,241	1718.....	1,884	1744.....	1,633
1692.....	1,592	1719.....	3,229	1745.....	1,206
1693.....	1,164	1720.....	1,440	1746.....	3,236
1694.....	1,683	1721.....	2,375	1747.....	1,380
1695.....	784	1722.....	2,167	1748.....	1,789
1696.....	196	1723.....	3,271	1749.....	2,625
1697.....	634	1724.....	1,227	1750.....	1,229
1698.....	1,813	1725.....	3,188	1751.....	998
1699.....	890	1726.....	1,569	1752.....	3,538
1700.....	1,031	1727.....	2,379	1753.....	774
1701.....	1,095	1728.....	2,105	1754.....	2,359
1702.....	311	1729.....	2,849	1755.....	1,988
1703.....	898	1730.....	1,914	1756.....	1,608
1704.....	1,501	1731.....	2,640	1757.....	3,296
1705.....	1,095	1732.....	1,197	1758.....	1,273
1706.....	721				

In his first letter to the Registrar-General, Mr. Farr remarks: "The registration of the causes of death, besides contributing to practical medicine, will give greater precision to the principles of physic. Medicine, like the other natural sciences, is beginning to abandon vague conjecture where facts can be accurately determined by observation; and to substitute numerical expressions for uncertain assertions. The advantages of this change are evident. The prevalence of a disease, for instance, is expressed by the deaths in a given time out of a given number living with as much accuracy as the temperature is indicated by a thermometer; so that when the mean population of the district is known, the rise and decline of epidemics may be traced exactly, and it will then be possible to solve the problem, whether certain tribes of epidemic disorders constantly follow others in one determined series or cycle. Loose phrases are still current, for which numerical formulæ will be substituted. Sydenham, one of the most accurate of medical writers, in speaking of small pox, employed such terms as these:—1661. 'It prevailed a little, but disappeared again.' 1667-9. 'The small pox was more prevalent in town for the first two years of this constitution than I ever remember it to have been.' 1670-2. 'The small pox arose; yielded to the dysentery; returned; &c. &c.' These terms admit of no strict comparison with each other; for it is difficult to say in which year the small pox was most fatal, and impossible to compare Sydenham's experience thus expressed with the experience of other writers in other places and other ages. The 1,987 deaths from small pox in 1668, and the 951 in the year following, express the relative intensity of small pox in distinct terms. The method of the parish clerks, though imperfectly carried out, was the best. \* \* \* \* Only a limited number of facts fall under the notice of a single observer. His opinions, when they are the results of his own experience, are stated in general terms, and are often adopted by others in entirely different circumstances. Notwithstanding the constancy of nature, this leads to serious practical errors. Hippocrates wrote his immortal works in Asia Minor and Greece in a particular climate, stage of culture, and civilization; yet all his precepts were taken for the guide of his successors in England, France, and Ger-

many. The therapeutic doctrines of Sydenham, who lived in Pall Mall, and practised principally in Westminster, spread through Europe. The celebrated Broussais' theory of irritation and *gastro-enterite* originated in the French camps. The physicians of this country, when the causes of death are universally recorded, and recorded accurately, will be saved from the fallacies of partial generalization, and, with the results of the registry before them, will be enabled to obtain extended views of the nature, courses, and modifications of diseases."—Registrar-General's First Report, pp. 87, 88.

## H.

The following is a specimen of the Medical Certificate of Cause of Death, from the book of blank forms supplied to every qualified medical practitioner; it is forwarded to the Registrar of the sub-district in which the undermentioned death took place:—

CERTIFICATE OF CAUSE OF DEATH.

I hereby certify that I attended \_\_\_\_\_ aged \_\_\_\_\_  
 \_\_\_\_\_ last Birthday; that I last saw h\_\_\_\_\_ on \_\_\_\_\_  
 that \_\_\_\_\_ he died on \_\_\_\_\_ at \_\_\_\_\_  
 and that the cause of h\_\_\_\_\_ death was

	Cause of Death.	Duration of Diseases.
(a) First	Scarlatina.....	8 days
(b) Second	Meningitis .....	48 hours

Signed John Brown,

Prof'l. Title M.R.C.S.,

Address 52, Guilford Street,

Russell Square.

Exclusive of the deaths on which inquests are held, and which are therefore returned to the registrar by coroners, the following weekly numbers, registered at various times, will show the average proportion of cases in which the disease is ascertained by the medical attendant, and attested by him:—

	Week ending March 30, 1850.	Week ending Oct. 4, 1851.	Week ending Jan. 3, 1852.	Week ending June 6, 1852.	Mean Proportion out of 100 cases.
The causes of death were—					
Certified by written statements of qualified practitioners.....	946	858	1,050	851	96·1
Not certified, because deceased persons had no medical attendance .....	13	11	18	21	1·6
Not certified (or only reported orally or by a non-medical informant) .....	23	21	34	11	2·3
Total .....	982	890	1,102	883	100·0

Hence it appears that the cause of death is properly authenticated in 96 out of 100 cases.

TABLE I.

## WORKHOUSES, HOSPITALS, PRISONS, &amp;c.

(From the Registrar-General's Weekly Reports, 1850, No. 26.)

The public institutions of London contained 40,783 inmates in the quarter ending March 31st, 1850, namely, 23,972 in workhouses, 3,579 in military and naval asylums, 2,847 in hospitals for the treatment of common diseases, 169 in hospitals for special diseases, 50 in lying-in hospitals, 670 in military and naval hospitals, 3,849 in lunatic asylums, 216 in hospitals and asylums for foreigners, and 5,435 in prisons. Of 10,000 inhabitants 108 were in workhouses, 14 in hospitals, 17 in lunatic asylums, 24 in prisons, 183 in some institution or another. Of the total deaths in the quarter 18 per cent. occurred in public institutions. If the proportion should continue the same, it will follow that 1 in 5 or 6 of the inhabitants who die in London will end their days in a public institution, 1 in 10 in a workhouse, 1 in 21 in a hospital, 1 in 102 in a lunatic asylum. The mortality in public institutions was 23 per cent. on the average number of inmates.

*Persons Dying and Discharged; Term of Residence; Population; Rates of Mortality in 1851. Deaths in 1851 and 1853.*

(From the Registrar-General's Weekly Reports.)

Public Institutions.	1851.						1853.
	Persons Dead and Relieved, or for other reason Discharged.	Average Term of Residence.	Average Number of Inmates.	Deaths in 1851.	Deaths to 100 cases.	Deaths to 100 Beds assumed to be continually occupied.	
Workhouses .....	52,441	Days. 149	21,435	4,919	9·38	22·95	5,955
General hospitals .....	29,857*	34	2,762	2,266	7·59	82·04	2,675
Hospitals for special diseases .....	2,212	42	254	254	11·48	100·00	281
Lying-in hospitals .....	817	25	57	7	·85	12·28	35†
Lunatic asylums .....	2,233‡	Years. 1·68	3,748	394	17·64	10·51	400
Military and naval hospitals .....	9,495	Days. 22	584	228	2·40	30·04	263
Hospitals and asylums for foreigners .....	556	46	70	31	5·58	44·29	59
Prisons .....	40,636	53	5,857	70	·17	1·20	106
Total .....	138,247	92	34,767	8,169§	5·91	23·50	9,774§

\* In 1851, eleven general hospitals had 2,762 patients constantly resident, and 2,266 patients died; the mortality was, therefore, more than 82 per cent. The patients remained, on an average, 34 days in the hospitals; 29,857 passed through the wards, and the mortality out of the whole number of sick was 7·59 in the 34 days. About 92 in 100 who entered the hospitals left them alive.

† Including 22 children who died in lying-in hospitals.

‡ The average number of lunatics in twenty asylums was 3,748; the deaths in the year 1851 were 394; the annual rate of mortality was, therefore, 10·51 per cent. But the patients remained, on an average, 1·68 years in these asylums, and only 2,233 died or were discharged; consequently 17·64 in 100 cases terminated fatally, and of 100 persons who entered, 82·36 left the asylums alive.

§ In 1851 and 1853, of all persons who died in London about a sixth part closed their career in public institutions. The same proportion as in 1850.



TABLE K.

*Average Numbers of Deaths in London, at Three Periods of Life, in each Week of the Year; derived from the Returns of Ten Years, 1843-52.*

Number of Week	Average Date at which the Week ended.	From Birth to 15 Years.	15 Years to 60 Years.	60 Years and upwards	Number of Week.	Average Date at which the Week ended.	From Birth to 15 Years.	15 Years to 60 Years.	60 Years and upwards.
1	Jan. 5	541	398	277	14	April 6	456	341	224
2	Jan. 12	499	371	273	15	April 13	433	325	201
3	Jan. 19	486	377	270	16	April 20	427	334	206
4	Jan. 26	480	358	243	17	April 27	422	320	197
5	Feb. 2	462	352	249	18	May 4	407	333	187
6	Feb. 9	468	349	238	19	May 11	415	317	182
7	Feb. 16	450	358	238	20	May 18	425	324	183
8	Feb. 23	463	374	258	21	May 25	413	307	178
9	Mar. 2	461	348	240	22	June 1	405	304	178
10	Mar. 9	459	344	240	23	June 8	407	314	170
11	Mar. 16	464	370	245	24	June 15	403	313	168
12	Mar. 23	468	362	262	25	June 22	414	310	170
13	Mar. 30	508	401	254	26	June 29	438	351	183

Number of Week.	Average Date at which the Week ended.	From Birth to 15 Years.	15 Years to 60 Years.	60 Years and upwards.	Number of Week.	Average Date at which the Week ended.	From Birth to 15 Years.	15 Years to 60 Years.	60 Years and upwards.
27	July 6	430	329	162	40	Oct. 5	508	336	193
28	July 13	452	299	163	41	Oct. 12	467	306	177
29	July 20	496	334	172	42	Oct. 19	456	312	176
30	July 27	536	334	177	43	Oct. 26	466	313	174
31	Aug. 3	554	333	179	44	Nov. 2	478	311	182
32	Aug. 10	570	341	179	45	Nov. 9	491	316	189
33	Aug. 17	551	352	189	46	Nov. 16	490	331	202
34	Aug. 24	532	368	192	47	Nov. 23	491	327	203
35	Aug. 31	538	391	193	48	Nov. 30	514	355	223
36	Sept. 7	541	407	203	49	Dec. 7	548	373	278
37	Sept. 14	530	402	193	50	Dec. 14	550	382	281
38	Sept. 21	506	359	185	51	Dec. 21	560	367	279
39	Sept. 28	509	357	191	52	Dec. 28	500	372	245

Of 100 persons who died in London, 46 had not completed their 15th year; 33 were 15 years of age, but had not completed their 60th year; 20 were 60 years of age and upwards. In the above table, the unhealthiness of the hot season is exaggerated by the cholera of 1849, during the months, principally August and September, in which it prevailed; but it is sufficiently clear that the mortality of the young in summer reaches its maximum before the middle of August.

### *Increase of Epidemics.*

In the presence of great and undeniable improvements which the men of the present century have witnessed—the opening of new streets and parks, the supply of better house accommodation for the middle classes, the erection of churches and magnificent public and private buildings, constitutional reforms, better food, better education,

and better amusements, with all the symbols of an increase and wider diffusion of national wealth, and of an improved tone of public morals, it is both difficult and disagreeable to admit that the public health has undergone deterioration, a fact which, nevertheless, the foregoing remarks appear to have established. It may be, therefore, useful to quote the words of writers who speak with authority on this subject. In the Registrar-General's Report on Cholera, the following passage occurs (pp. iii., iv.):—"After the Revolution, the great plagues ceased, but the mortality was kept up by typhus, small pox, influenza, and other zymotic diseases. The writings of Mead, Pringle, Lind, Blane, Jackson, Price, and Priestley, the sanatory improvements in the navy, the army, and the prisons, as well as the discovery of vaccination, by Jenner, all conduced to the diffusion of sound doctrines of public health, and had a practical effect, which, with the improved condition of the poorer classes, led to a greatly reduced mortality in the present century. Since 1816, the returns indicate a retrograde movement. The mortality has apparently increased. Influenza has been several times epidemic, and the Asiatic cholera reached England, and cut off several thousands of the inhabitants, in 1832. It reappeared and prevailed again, as we have seen, with no mitigated violence, in 1849." In the first Report of the Metropolitan Sanatory Commissioners (19th Nov., 1847), it is stated that "though cases of fever were always present in certain localities in the Metropolis, yet several years commonly intervened between one epidemic season or year and another; but fever assuming a severer character, and spreading more extensively than usual in 1838, fever has prevailed as an epidemic ever since. The admissions into the London Fever Hospital since April have exceeded by several hundreds those of any corresponding period. The steadily-increasing prevalence of fever in the metropolis is further shown by the Registrar-General's return of the weekly deaths from typhus during the last three years. The weekly deaths from typhus in 1846 very generally and greatly preponderated over those in 1845, being in several weeks nearly double, and in some few more than double; the deaths in 1847 were still more in excess of those of 1846, being in numerous instances considerably more than double the number in the corresponding weeks of 1846, and in one instance more than treble; and generally from the month of August of the present year (1847), the mortality has been considerably greater than at any previous period since the commencement of the registration. It is clear, therefore, that whatever may have been their intensity in former years, the causes of epidemic disease continue to operate in the metropolis with unabated and even with increased force at the present time. \* \* \*

The dreadful extent to which entire classes of the population who have abundance of wholesome food, but who habitually live in impure air, suffer from certain epidemics, as, for example, artizans and the lower class of shopkeepers, from the very pestilence in question, affords a demonstration that the habitual respiration of impure air is an incomparably more powerful predisponent to epidemic disease than that which has been commonly assumed as the main cause, namely, absolute poverty." The following numbers bring the deaths from typhus down to the latest period:—

Years.	Deaths.	Years.	Deaths.
1840.....	1,262	1847.....	3,184
1841.....	1,151	1848.....	3,569
1842.....	1,174	1849.....	2,479
1843.....	2,083	1850.....	1,923
1844.....	1,696	1851.....	2,346
1845.....	1,301	1852.....	2,164
1846.....	1,796	1853.....	2,649

Dr. Stark, in his Inquiry into the Sanatory State of Edinburgh (1847), writes as follows:—"From 1780 to 1789, 1 person died annually out of every 34 living; from 1790 to 1799, 1 died annually out of every 36 living; so that, in proportion as Edinburgh was better supplied with water, and spread into the newer parts of the town, the health of the city improved. From 1800 to 1809, there died annually only 1 out of every 39 inhabitants; and from 1810 to 1819, only one out of every 40 living. Thus it is seen that in proportion as the town improvements went on, the mortality of the inhabitants diminished. The next decennial period, from 1820 to 1829, shows, however, a retrograde movement, the mortality increasing to 1 out of every 38 inhabitants annually; and being still greater during the consecutive decennial period 1830 to 1839, during which period 1 died annually out of every 34 living. During the current decennial period, there has been 1 death out of every 36 living, showing that since 1820 causes of mortality have been at work which were not then in existence, and are if anything on the increase." This deterioration, the date of which, it will be observed, very nearly corresponds with that assigned in the Registrar-General's Report for a similar change in the health of England, Dr. Stark attributes principally to a worse moral and physical condition of the lower classes, arising from the immigration of Irish into Edinburgh, who began to pour in greater numbers into that city in 1818, and, at the time he wrote, constituted nine-tenths of its paupers.

We return to Captain John Graunt, whose name has been more than once mentioned in the course of this paper, and who says, in his own quaint fashion, that "back-startings seem to be universal in all things; for we do not only see in the progressive motion of the wheels of watches, and in the rowing of boats, that there is a little starting or jerking backwards between every step forwards, but also there appears the like in the motion of the moon, which, in the long telescopes at Gresham College, one may sensibly discern." To this remark it can only be added, that if this be a law of progress in the life of a nation, we must, however reluctantly, submit to it as a necessity; but, at the same time, it will be wise to provide, by all means in our power, that progress be not superseded by a retrogression, to which "forward-startings" will be only the exceptions.